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(81) Designated States (national): BR, CN, CZ, CZ (utility model), JP, MX, RU, US.

(84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published:

— With international search report.

(88) Date of publication of the international search report:
30 November 2000

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **DISHWASHING DETERGENT COMPOSITIONS CONTAINING MIXTURES OF CRYSTALLINITY-DISRUPTED SURFACTANTS**

(57) Abstract: A hand dishwashing compositions comprising: a) about 0.1 % to about 99.9 % by weight of said composition of an alkylarylsulfonate surfactant system comprising from about 10 % to about 100 % by weight of said surfactant system of two or more crystallinity-disrupted alkylarylsulfonate surfactants of formula $(B-Ar-D)_a(M^q)_b$, wherein D is SO_3^- , M is a cation or cation mixture, q is the valence of said cation, a and b are numbers selected such that said composition is electroneutral; Ar is selected from benzene, toluene, and combinations thereof; and B comprises the sum of at least one primary hydrocarbyl moiety containing from 5 to 20 carbon atoms and one or more crystallinity-disrupting moieties, wherein said crystallinity-disrupting moieties interrupt or branch from said hydrocarbyl moiety; and wherein said alkylarylsulfonate surfactant system has crystallinity disruption to the extent that its Sodium Critical Solubility Temperature, as measured by the CST Test, is no more than about 40°C; and wherein further said alkylarylsulfonate surfactant system has at least one of the following properties: percentage biodegradation, as measured by the modified SCAS test, that exceeds tetrapropylene benzene sulfonate; and weight ratio of nonquaternary to quaternary carbon atoms in B of at least about 5:1; and b) from about 0.00001 % to about 99.9 % by weight of said composition of a conventional hand dishwashing adjunct; c) from about 0.01 % to about 7 % by weight of composition of a divalent ion selected from the group consisting of magnesium, calcium and mixtures thereof.

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 7399/VB	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 99/29776	International filing date (day/month/year) 15 December 1999	(Expiry) Priority Date (day/month/year) 20 January 1999
Applicant THE PROCTER & GAMBLE COMPANY et al.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (see Box I).
2. ☐ Unity of invention is lacking (see Box II).
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing
 - ☐ filed with the international application.
 - ☐ furnished by the applicant separately from the international application,
 - ☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
 - ☐ Transcribed by this Authority
4. With regard to the title, ☒ the text is approved as submitted by the applicant.
 - ☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,
 - ☒ the text is approved as submitted by the applicant.
 - ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:
 - Figure No. _____ ☐ as suggested by the applicant. ☐ None of the figures.
 - ☐ because the applicant failed to suggest a figure.
 - ☐ because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/29776

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C11D1/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 99 05243 A (THE PROCTER & GAMBLE) 4 February 1999 (1999-02-04) abstract; claims 1-9; examples ---	1-14
P,X	WO 99 05082 A (THE PROCTER & GAMBLE) 4 February 1999 (1999-02-04) abstract page 20, line 12 -page 22, line 4; examples 1,13,14 ---	1-14
A	WO 93 17084 A (PROCTER & GAMBLE) 2 September 1993 (1993-09-02) page 4, line 20 -page 5, line 24; claims -----	1-29

☐ Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *B* document member of the same patent family

Date of the actual completion of the international search

5 May 2000

Date of mailing of the international search report

28 AUG 2000

Name and mailing address of the ISA

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Authorized officer

Seirafi

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/29776

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9905243 A	04-02-1999	AU 8124898 A EP 1002030 A ZA 9806451 A	16-02-1999 24-05-2000 21-01-1999
WO 9905082 A	04-02-1999	AU 8124298 A EP 1001921 A ZA 9806443 A	16-02-1999 24-05-2000 21-01-1999
WO 9317084 A	02-09-1993	AU 3615793 A BR 9305919 A CA 2130466 A,C CN 1076477 A CZ 9401974 A DE 69320794 D DE 69320794 T EP 0626995 A ES 2119890 T FI 943800 A HU 68839 A JP 2871941 B JP 5295390 A MX 9300834 A NO 943024 A NZ 249400 A RU 2114907 C SK 98094 A TR 27773 A US 5635464 A	13-09-1993 26-08-1997 02-09-1993 22-09-1993 18-01-1995 08-10-1998 29-04-1999 07-12-1994 16-10-1998 18-08-1994 28-08-1995 17-03-1999 09-11-1993 29-07-1994 16-08-1994 24-02-1997 10-07-1998 05-01-1995 09-08-1995 03-06-1997

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 7399/VB		FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US99/29776	International filing date (day/month/year) 15/12/1999	Priority date (day/month/year) 20/01/1999		
International Patent Classification (IPC) or national classification and IPC C11D1/00				
Applicant THE PROCTER & GAMBLE COMPANY				

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☒ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 04/08/2000	Date of completion of this report 19.01.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Renoth, H Telephone No. +49 89 2399 8589



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/29776

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

1-102 as originally filed

Claims, No.:

1-29 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/29776

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

II. Priority

1. ☐ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:
- ☐ copy of the earlier application whose priority has been claimed.
 - ☐ translation of the earlier application whose priority has been claimed.
2. ☒ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid.

Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:
see separate sheet

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	11,16,26
	No:	Claims	1-10, 12-15, 17-25, 27-29
Inventive step (IS)	Yes:	Claims	
	No:	Claims	11,16,26
Industrial applicability (IA)	Yes:	Claims	1-29
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US99/29776

claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/29776

ad item II.:

WO-A-99/05243 (hereinafter referred to as **D1**), published on 04.02.99 and having a filing date of 20.07.98, is a prior application in the name of the same Applicant/Inventors as the present application. This document, as explained in the following section V., already partially disclosed the subject-matter claimed in the present application and related to the same invention. Therefore, this document constitutes in this respect the first application for the invention claimed in the present application and the presently claimed priority date of 20.01.99 cannot be allowed (see Article 8.2(a) PCT and PCT Guidelines V-1.4).

Therefore, D1 has to be considered as prior art under Rule 64.1(a) PCT.

ad item V.:

D1 discloses the preparation of a mixture of branched alkyl benzene sulphonates, which are crystallinity disrupted alkylarylsulfonates as in present claim 1. The method of preparation appears to be very similar to the method used for the preparation of the mixtures of the present application. Therefore, the resulting product must comply with the requirements of present claim 1 (see claims and pages 10 to 19 of D1).

D1 discloses detergent compositions, which are dishwashing detergents or are suitable for hand dishwashing comprising such mixtures. Moreover, magnesium and calcium ions as required by present claim 1 are comprised in the hand dishwashing compositions of example 13.

Independent claims 1 and 27 thus lack novelty (Article 33(2) PCT).

The additional features of the remaining dependent claims, with the exception of claims 11, 16 and 26, are also known from D1 for the same reasons put forward herein above, i.e. the claimed mixture of surfactants must be the same as that disclosed in D1 and the claimed detergent compositions are of the same type as those of D1.

Therefore, all the remaining dependent claims, with the exception of claims 11, 16 and 26, also appear to lack novelty.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/29776

However, the addition of a specific surfactant, a nonionic surfactant or a polymeric suds stabilizer, as defined in dependent claims 11, 16 and 26, respectively, is not considered to comprise any surprising effect.

Furthermore, a specific surfactant, a nonionic surfactant or a polymeric suds stabilizer have already been employed for the same purpose in a similar compositions. It would be obvious to the person skilled in the art, in particular when the same result is to be achieved, to apply a specific surfactant, a nonionic surfactant or a polymeric suds stabilizer.

The subject-matter of dependent claims 11, 16 and 26 does therefore not involve an inventive step (Article 33(3) PCT).

ad item VII:

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor are these documents identified therein.

Metric units should be used beside "psig" on pages 13-17 (Rule 10.1(a) PCT).

The description refers to the following not published documents: USSN on page 25 (USSN 60/053,318); page 31, lines 15-31; page 68, lines 15-19 and PCT/DK 96/00056 (p. 50, 51).

ad item VIII.:

Claim 21 comprises the unclear wording "ii) C₃-C₁₀ linear, C₃-C₁₀ branched linear, C₃-C₁₀ cyclic ", which does not identify precisely the desired substituents.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C.20231
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)

06 September 2000 (06.09.00)

International application No.

PCT/US99/29776

Applicant's or agent's file reference

7399/VB

International filing date (day/month/year)

15 December 1999 (15.12.99)

Priority date (day/month/year)

20 January 1999 (20.01.99)

Applicant

SCHEIBEL, Jeffrey, John et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

04 August 2000 (04.08.00)



in a notice effecting later election filed with the International Bureau on:

2. The election



was



was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

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